

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. After amending the claims as set forth above, claims 17 and 19-32 are now pending in this application.

Applicants wish to thank the Examiner for the careful consideration given to the claims.

Information disclosure statement

Applicants respectfully request consideration of the information disclosure statement (IDS) filed on July 14 2009, and a copy of a fully initialed and signed PTO/SB/08 form accompany the next office communication.

Rejection of claims 17, 19-28 and 30-32 based on Nonobe and Kimura

Claims 17, 19-28 and 30-32 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over U.S. Patent 6,158,537 ("Nonobe") and U.S. Patent 5,964,309 ("Kimura"). For at least the following reasons, this rejection is traversed.

Claim 17 (as amended) recites, among other things, an energy supply comprising a fuel cell, a power distributor connected to the fuel cell, and a secondary cell connected to the fuel cell via the power distributor; a load set connected to the fuel cell and the secondary cell via the power distributor, the load set comprising auxiliary equipment for power generation of the fuel cell; and a controller configured to start a temperature rise promoting operation, when the fuel cell system is started up and if a warm-up mode is required. The controller is configured to perform the temperature rise promoting operation by alternately repeatedly switching between a first power distribution unit and a second power distribution unit regardless of power consumption of the load set, for promoting concurrent temperature rise of both of the fuel cell and the secondary cell. The first power distribution unit has a first power generated at the fuel cell and distributed to the secondary cell and the load set. The second power distribution unit has a combination of a second power generated at the fuel cell and a third power discharged from the secondary cell, distributed to the load set.

According to the claimed fuel cell system of claim 17, alternately repeatedly switching between the first and second power distribution units is performed regardless of power consumption of the load set. For instance, Fig. 5 of the specification shows where the power

generation of the fuel cell and the charge/discharge of the secondary cell are pulsed. (See page 23, line 21 to page 24, line 26 of the specification.) Due to this feature, both the fuel cell and the secondary cell can be quickly and concurrently warmed up at system start-up. Nonobe and Kimura do not teach or suggest the combination of features of claim 17.

For instance, Nonobe and Kimura does not teach or suggest a controller configured to start a temperature rise promoting operation when the fuel cell system is started up and if a warm-up mode is required or configured to perform the temperature rise promoting operation by alternately repeatedly switching between a first power distribution unit and a second power distribution unit regardless of power consumption of the load set, for promoting concurrent temperature rise of both of the fuel cell and the secondary cell.

Nonobe discloses that, when the power supply system 10 is started, the control unit 50 gradually increases the flows of gases supplied to the fuel cells 20. After the warm-up of the fuel cells 20 has been completed, the fuel cells and the storage battery take charge of the outputs at a predetermined ratio according to the magnitude of the loading and the charge state of the storage battery, while the fuel cells charge the storage battery. (Column 12, line 64 to column 13, line 21 of Nonobe.) Nonobe does not disclose or suggest a controller configured to start or perform the temperature rise promoting operation of claim 17.

Kimura does not cure the deficiencies of Nonobe. In Kimura, the storage battery 30 is either charged or discharged during the start-up of the power supply system 10. If the storage battery 30 is in the sufficient charge state at the time of starting the power supply system 10, the electric power is continued to be supplied from both the fuel cells 20 and the storage battery 30 to the auxiliary machinery 34, during the start-up of the power supply system 10. If the storage battery 30 is in the insufficient charge state at the time of starting the power supply system 10, the electric power is to be supplied from the fuel cells 20 to the storage battery 30 and the auxiliary machinery 34 during the start-up of the power supply system 10. (Column 11, lines 11-41 of Kimura.) During the operation of the power supply system 10 of Kimura, after the start-up of the power supply system, the storage battery 30 is to be charged and discharged but the state of being charged and discharged is varied according to power consumption of an external loading, in particular the driving amount of the motor 32. (Column 14, lines 5-20 of Kimura.) Kimura fails to disclose a secondary cell being repeatedly and alternately charged and discharged when the system is started up. As a result,

Kimura does not teach or suggest a controller configured to start or perform the temperature rise promoting operation of claim 17.

The PTO asserts that:

one of ordinary skill in the art would appreciate that, depending on whether the fuel cell stack used in the system of Nonobe, as modified by Kimura, requires warming-up or its storage battery requires charging, the power distributor will repeatedly switch between the warm-up of the fuel cell stack or charging of the storage battery during operation of its electric vehicle, as required. (Pages 3-4 of the Office Action.)

Applicants submit that Nonobe and Kimura, either alone or in combination, do not support such a teaching. Indeed, neither Nonobe nor Kimura discloses a controller configured to alternately repeatedly switch between a first power distribution unit and a second power distribution unit regardless of power consumption of the load set, for promoting concurrent temperature rise of both of the fuel cell and the secondary cell. Because neither Nonobe and Kimura teaches or suggests the controller of claim 17, claim 17 is allowable.

Claims 19-28 and 30 depend from and contain all the features of claim 17, and are allowable for the same reasons as claim 17, without regard to the further patentable features contained therein. However, Nonobe and Kimura do not teach or suggest these claims. Claims 19-30 each recites a limitation related to the controller being further configured to perform some function. The PTO asserts that the controller of Nonobe as modified by Kimura “is capable of being configured” to perform these functions. (Pages 4-5 of the Office Action.¹) However, if Nonobe and Kimura do not teach the functions performed by the controller of each of the dependent claims 19-30, it is not possible for one of ordinary skill in the art to appreciate that the controller of Nonobe as modified by Kimura “is capable of carrying out these functions.” Indeed, the functions of the controller of each of the dependent claims 19-30 are not disclosed in Nonobe or Kimura, and one of ordinary skill in the art

¹ The PTO has summarily dismissed most of these limitations by asserting the following or something similar:

One would appreciate that the controller of Nonobe, as modified by Kimura, is capable of being configured to [function provided in the respective dependent claim], as recited by the functional language of [the respective dependent claim] because all the structural limitations upon which this claim depends have been taught by Nonobe. See MPEP 2114.” (Pages 4-5 of the Office Action.)

would not understand that the controller of Nonobe as modified by Kimura to “be capable” of carrying out functions that are not described in Nonobe and Kimura. The fact that the controller of Nonobe as modified by Kimura is programmable does not, by itself, render the controller of each of the dependent claims 19-30 unpatentable if the functions of which it allegedly performs is not disclosed by Nonobe or Kimura.

The Federal Circuit has held that a general purpose computer programmed to carry out a claimed invention creates a new machine because the general purpose computer becomes a special purpose computer once it is programmed to perform particular functions. *See In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994). The court of *In re Noll*, cited by the Federal Circuit in *In re Alappat*, stated that a programmed machine is structurally different from a machine without that program. *See* 545 F.2d 141, 148 (C.C.P.A. 1978).

Applicants respectfully submit that these cases demonstrate that a device, such as a controller, that is configured or otherwise programmed to perform a function (as a special purpose controller) is not only different from a general purpose controller, but that the configuration or programming of the special purpose controller provides structure that is not present in a general purpose controller that lacks the same configuration or programming of the special purpose controller. Therefore, such a general purpose controller (such as the one provided in Nonobe as modified by Kimura) does not render such a special purpose controller (such as those recited in each of the dependent claims 19-30) unpatentable because the general purpose controller does not contain all of the features of the special purpose controller.

Furthermore, the court of *In re Prater*, which was also cited by the Federal Circuit in *In re Alappat*, considered arguments that a general purpose computer could be programmed to practice a claimed device, such as a special purpose computer. *See* 415 F.2d 1393, 1405 (C.C.P.A. 1969). The court suggested that such an analysis may be rooted in hindsight because it assumes the existence in the prior art of an applicant’s discovery, not just the existence of a general purpose computer in the prior art and the ability to program it. Instead, the court noted that a proper obviousness determination under 35 U.S.C. § 103 requires an analysis of the prior art at the time that the invention was made. *Id.* at 1406. The court further stated that even if general purpose computers and typical programming techniques existed at the time of an invention, an applicant’s invention is still not obvious under 35

U.S.C. § 103 if one of ordinary skill in the art did not have the knowledge of applicant's discovery because one of ordinary skill in the art would not have known what to program such a general purpose computer to do. *Id.* Applicants respectfully submit that *In re Prater* demonstrates that it would not have been obvious to modify a general purpose controller (such as the one provided in Nonobe as modified by Kimura) to perform the function of a claimed special purpose controller (such as those recited in each of the dependent claims 19-30) without a teaching or suggestion in the prior art of Applicant's invention that supports such a modification.

In view of this controlling legal authority, Applicants respectfully submit that a special purpose controller that is configured or otherwise programmed to perform a function is not rendered unpatentable by a general purpose controller that lacks the same configuration or programming, and that it would not have been obvious to modify such a general purpose controller to have the configuration or programming of the special purpose controller, absent a teaching or suggestion in the prior art to do so.

Because the controller of each of the dependent claims 19-30 is programmed for a particular function (a special purpose controller), it is structurally different from the controller of Nonobe as modified by Kimura (a general purpose controller) that is not programmed for the respective particular function. Accordingly, Nonobe and Kimura do not teach or suggest the controller of each of the dependent claims 19-30, and these claims are allowable.

In response to the above arguments, the PTO states:

applicant contends that the court decision in *In re Noll* (545 F.2d 141) supports this argument. However, upon review of that decision, it appears applicant fails to appreciate the claims in question before the court in that case recite physical structures being programmed to perform specific functions. Applicant's contention that the programming itself create "structure is unsupported by the decision in *Noll*. (Page 8 of the Office Action)(emphasis in original.)

It is respectfully submitted that *In re Noll* does support Applicant's position. The dependent claims recite a controller configured to perform some function. Thus, the claims do recite a physical structure (i.e., the controller) being programmed to perform a specific function or functions. The distinction that the PTO is trying to make with regard to *In re Noll*

is not applicable in this instance. In view of *In re Noll*, *In re Prater*, and *In re Alappat*², Applicants maintain that the controller of each of the dependent claims 19-30 is programmed for a particular function (a special purpose controller) and are structurally different from the controller of Nonobe as modified by Kimura. Accordingly, Nonobe and Kimura do not teach or suggest the controller of each of the dependent claims 19-30, and these claims are allowable.

Claim 31 recites, among other things, a control method comprising the steps of: (1) promoting concurrent temperature rise of both of the fuel cell and the secondary cell by alternately repeatedly switching between a first power distribution unit and a second power distribution unit regardless of power consumption of the load set, wherein the first power distribution unit has a first power generated at the fuel cell and distributed to the secondary cell and the load set, and wherein the second power distribution unit has a combination of a second power generated at the fuel cell and a third power discharged from the secondary cell, distributed to the load set; and (2) starting the promoting concurrent temperature rise when the fuel cell system is started up and if a warm-up mode is required. Nonobe and Kimura do not teach or suggest this combination of features.

For instance, Nonobe does not teach or suggest the step of promoting concurrent temperature rise of both of the fuel cell and the secondary cell by alternately repeatedly switching between a first power distribution unit and a second power distribution unit regardless of power consumption of the load set. Nonobe merely teaches the supplying of energy to a storage battery when the fuel cell system is stopped. The passages cited by the PTO in the rejection of claim 31 do not support the teaching of the step of promoting concurrent temperature rise. Indeed, the passage of Nonobe cited by the PTO for allegedly providing a teaching of the step at start-up (column 12, line 64 to column 13, line 14) does not teach the controlling of the power distributor to warm the energy supply by alternately repeated switching of a first power distribution unit and a second power distribution unit. The passage of Nonobe cited by the PTO for allegedly providing a teaching of the alternately repeated switching (column 10, line 66 to column 11, line 13 and column 11, lines 52-60) does not relate to start-up. Thus, Nonobe does not teach or suggest the step of promoting

² It is noted that the PTO did not address *In re Prater*, and *In re Alappat*.

concurrent temperature rise of claim 31. Kimura does not cure the deficiencies of Nonobe because, as previously mentioned, Kimura also fails to disclose the promotion of concurrent temperature rise by alternately repeatedly switching between a first power distribution unit and a second power distribution unit. Because neither Nonobe and Kimura teach or suggest these features, claim 31 is allowable over Nonobe and Kimura.

Claim 32 (as amended) recites, among other things, an energy supply comprising a fuel cell, a power distributor connected to the fuel cell, and a secondary cell connected to the fuel cell via the power distributor; a load set connected to the fuel cell and the secondary cell via the power distributor; and a controller configured to start a temperature rise promoting operation to perform a warm-up control, when the fuel cell system is started up and if a warm-up mode is required. The controller is configured to perform the temperature rise promoting operation by alternately repeatedly switching between a first power distribution unit and a second power distribution unit regardless of power consumption of the load set, for promoting temperature rise of the energy supply. The first power distribution unit has a first power generated at the fuel cell and distributed to the secondary cell and the load set. The second power distribution unit has a combination of a second power generated at the fuel cell and a third power discharged from the secondary cell, distributed to the load set.

As previously mentioned, Nonobe and Kimura do not teach or suggest a controller configured to start a temperature rise promoting operation when the fuel cell system is started up and if a warm-up mode is required or configured to perform the temperature rise promoting operation by alternately repeatedly switching between a first power distribution unit and a second power distribution unit regardless of power consumption of the load set, for promoting temperature rise of the energy supply. Because Nonobe and Kimura lack these features, claim 32 is allowable over Nonobe and Kimura.

For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Rejection of claim 29 based on Nonobe, Kimura, on Mufford

Claim 29 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Nonobe, Kimura, and U.S. Patent 6,186,254 (“Mufford”). Claim 29 depends from and contains all the features of claim 17. Nonobe and Kimura do not teach or suggest all the

features of claim 17, including a controller configured to start a temperature rise promoting operation when the fuel cell system is started up and if a warm-up mode is required or configured to perform the temperature rise promoting operation by alternately repeatedly switching between a first power distribution unit and a second power distribution unit regardless of power consumption of the load set, for promoting concurrent temperature rise of both of the fuel cell and the secondary cell. Mufford does not cure the deficiencies of Nonobe and Kimura because Mufford merely discloses a temperature regulating system for maintaining the temperature of a fuel cell. Thus, no combination of Nonobe, Kimura, and Mufford teaches or suggests all the features of claim 17 and its dependent claim 29, and these claims are allowable. For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. § 1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date 6/8/2010

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5426
Facsimile: (202) 672-5399

By Matthew J. Kremer

Glenn Law
Registration No. 34,371

Matthew J. Kremer
Registration No. 58,671